SERVICE MANUAL

FULL AUTOMATIC DIRECT-DRIVE TURNTABLE

PD288
PD289

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EXPLANATION ABOUT FULL-AUTO MECHANNISM

1) Normal (Power Sw ON only or in Play)

Only NAND Gate input 12 is different between 33 r.p.m. and 45 r.p.m.

2) Put on START/CUT Button

NAND Gate output 10 shall be 0V, and TR01 and AC motor shall be ON. As soon as AC motor has been ON, Sw1 shall rotate until TR01 becomes OFF after Sw1 on the cam at the final stage has again turned over and the cam at the final stage has turned over half.

3) Record End

As inside-most diameters of LP and EP disc grooves are different each other, operation is also different (Its change can be done by individual r.p.m.)

33 r.p.m.
When the slit of Rester Lever comes into Sensor Assembly and the photo transistor becomes ON by LED light, NAND gate output 11 shall be ON and AC motor shall begin to rotate.

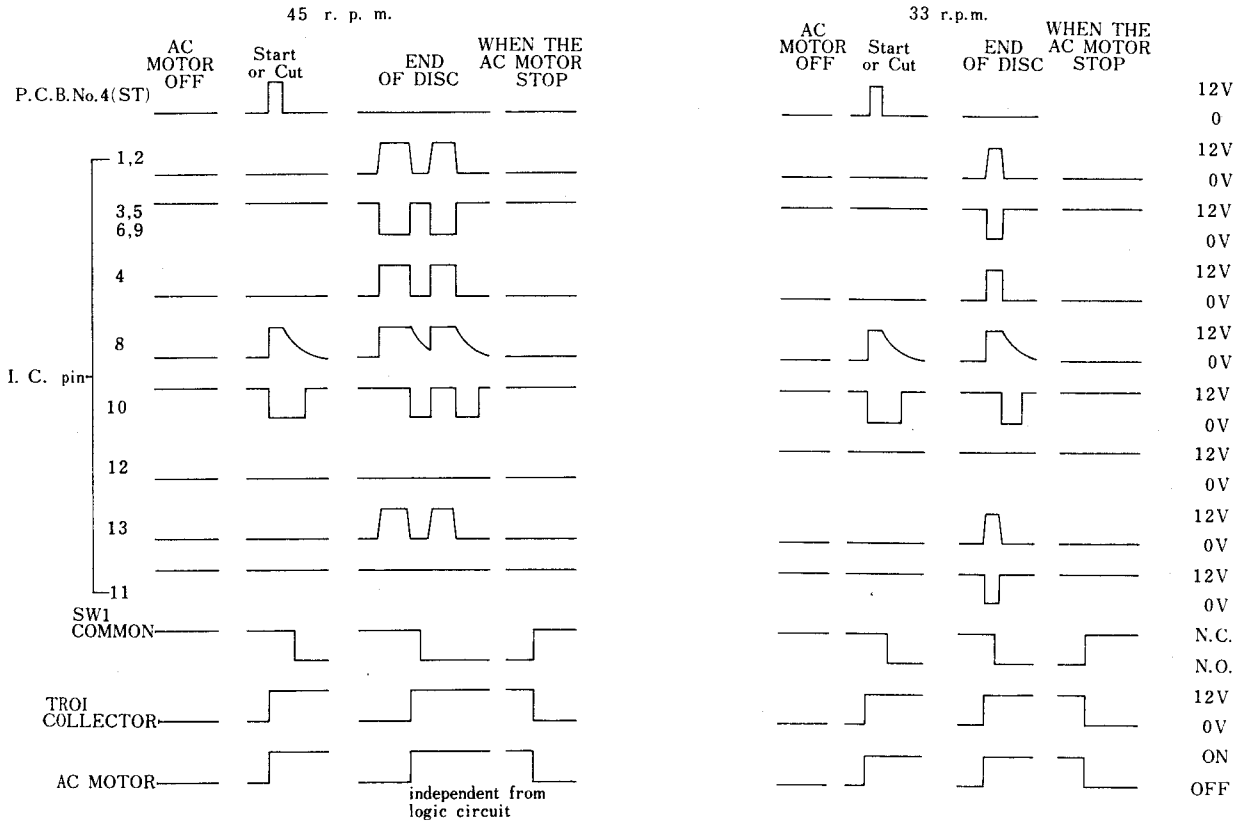
45 r.p.m.
When the slit of Rester Lever comes into Sensor Assembly with a photo transistor's being ON and the tonearm reaches the inside-most with the slit's shutting off LED light and eventually the photo transistor's being OFF, NAND gate output 10 shall be 0V and AC motor begins to rotate.
(On this occasion, when the tonearm returns, the slit of Rester Lever again passes through Sensor Assembly and the above-mentioned signal shall be input. However, it is not directly related since AC motor is in operation by Sw1.)

4) Repeat

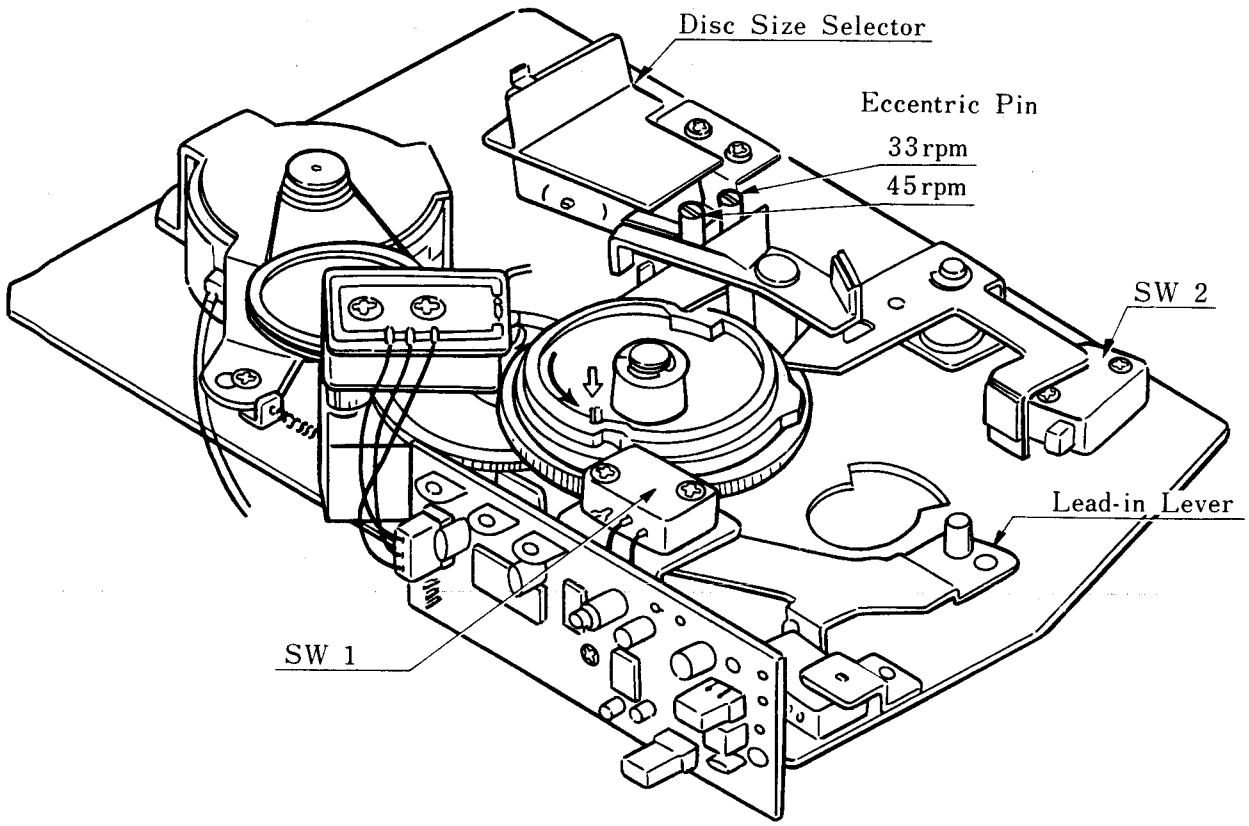
When the tonearm returns to the armrest in REPEAT mode, 12V shall be loaded to the 6P connector by Sw2 and same operation shall be made as in case of pressing START/CUT button.

REMARKS: As mentioned above, be careful for any light from outside to come especially into Sensor Assembly when you are reparing since this full-auto mechanism is optical one.

FULL-AUTO MECHANISM TIMING CHART



FULL-AUTO MECHANISM VIEW



ADJUSTMENT PROCEDURE

1. Confirmation of AC Mains Voltage

1-1 AC Secondary Voltage
AC 16V - For DC Mains
AC 10.2V - Motor Mains for tonearm driving
AC 1.8V - For reflection of turntable stroboscope

1-2 DC Mains Voltage
DC 18V - Direct-drive Motor Mains
DC 12V - Sensor Mains for tonearm driving

2. Adjustment of Motor Rotation

Adjustment will be possible by VR33 & VR45 on DC servo motor and speed adjustment VR of this model.

3. Height Adjustment of Tonearm Lifter

3-1 Put on Function Sw 45 for AUTO or MANUAL and make ready for play.

3-2 Loose fixing screw A of the tonearm lifter B and adjust the tonearm lifter to be up and down. Make stylus 4-12mm high from the record surface and tighten the fixing screw.

4. Lead-in Adjustment

4-1 Place the Cam on the indicated position - Brush position should be at Sw side. (Rotate to the direction of arrow and meet the groove of the Cam and the extreme point of Sw lever together.)

4-2 Make clearance of Lead-in lever pin and Rester lever 0.2-0.4mm.

5. Adjustment for Lead-in Position on Record Disc

5-1 Make the unit ready to play and put on START/CUT button.

5-2 Adjustment for Lead-in position can be made by rotating the Eccentric Pins. (This procedure is possible from the bottom side of bonnet with (-) screw driver.)

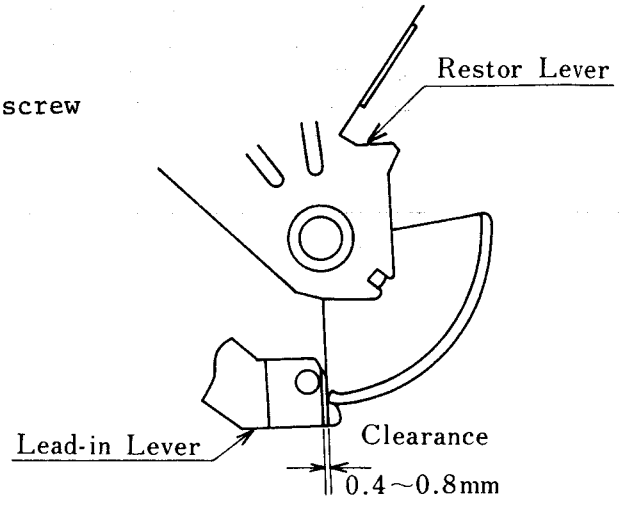
5-3 Unless the Eccentric Pins would be of enough help, lose the Fixing screw on Disc Size Selector and adjust.

6. Lead-out Adjustment

6-1 When adjustment is necessary, take the Rubber-cap off and lose the screw with a screw driver through the hole.

6-2 Adjust with a screw driver through the hole at the lefthand side.

6-3 After the adjustment, tighten up the screw used in the above procedure 6-1 and put the Rubber-cap again.



FULL-AUTO MECHANISM ALIGNMENT PROCEDURES

There happen to be eccentric record discs among those which are available in markets and in case these eccentric ones used for playing, the wave form will be as per Fig. 1 when the rester lever slit passes through the light axis of the sensor.

Fig.1

When eccentricity is remarkable, the wave form reads as per Fig. 2 and mis-operation shall be caused as for EP discs.

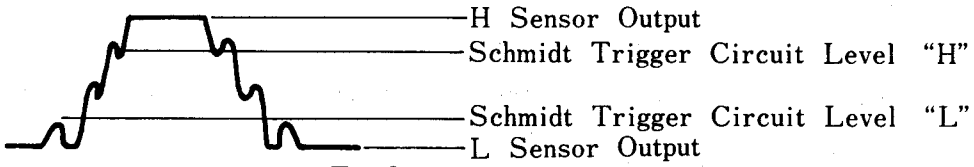


Fig.2

As return action is made on EP discs when output of schmidt trigger circuit comes to be "L" from "H", mis-operation shall be caused at the portion of the enlarged curve in Fig. 2.
So, prevent from mis-operation, make the hysteresis as wide as possible and adjust output level of the sensor to it.
Widening of the hysteresis in schmidt trigger circuit will be effective to prevention of outcoming noises, etc.
Adjustment of the hysteresis and output level of the sensor are made respectively by the VR02 and VR01 as far as the prevent circuit is concerned. In the actual procedures firstly adjust the hysteresis and secondly output level of the sensor.
The hysteresis is not always same since threshold value of IC's varies depending on IC's to be used.
So, at first adjust "H" level of schmidt trigger circuit to (x-0.8)V by the VR02 when output of the sensor is "H" (saturated state, provided to be xV), and at this point "L" level (provided to be yV) of schmidt trigger circuit shall be decided.
Secondly adjust "L" level of output of the sensor to (y-0.6)V by the VR01.
Above is all for adjustment.

Remarks: As to "H" level difference by 0.8V is made between threshold values of the sensor output and schmidt threshold, and as to "L" level difference by 0.6V between the threshold values. Those values are decided in consideration of charges in temperature, humidity and time process and other drifts as well.

P. C. B. ALIGHNMENT PROCEDURES

Set voltage for adjustment at 11.5 + 0.1V with use an EP disc and prevent the sensor from receiving external light.

1. Adjustment of the VR02 (adjustment of the hysteresis in schmidt trigger circuit).

   a. Make preliminary adjustment of the VR02 not to make I.C. No. 4 "H" from "L" when the sensor is open.

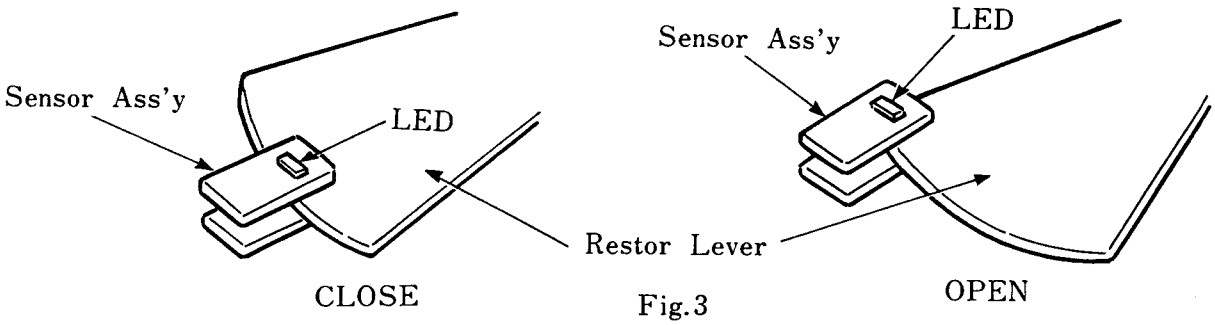


Fig.3

   b. Separate output of the sensor as per the Fig. 4 below and put a variable resistor externally to give output of the sensor voluntarily.

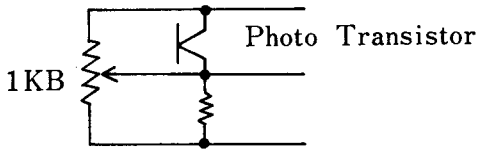


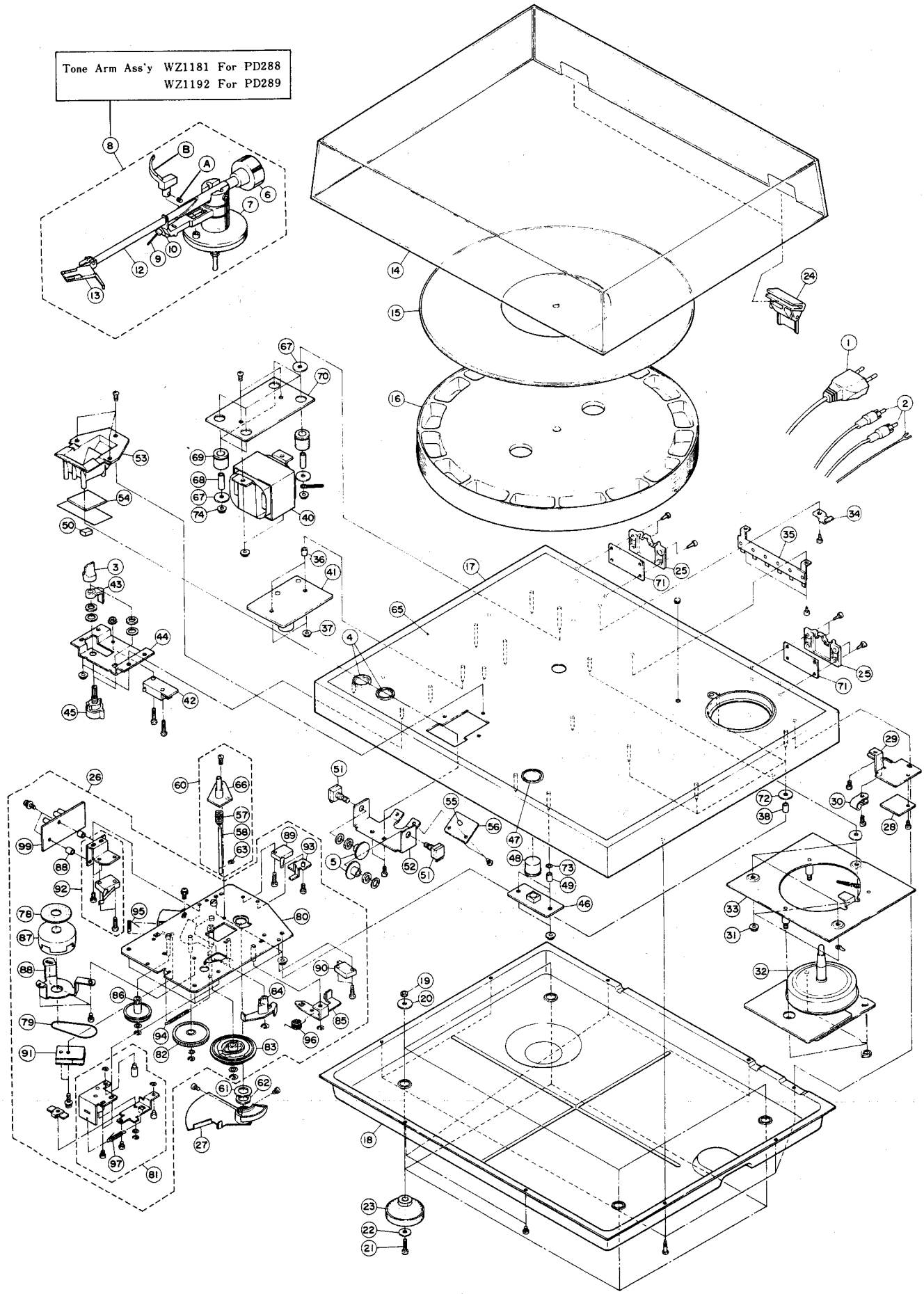
Fig.4

   c. Measure "H" of output of the sensor (provided to be V1) at the foregoing step a and give voltage of (V1 - 0.8V) at the foregoing step b.
   d. At the foregoing step c adjust the VR02 to make I.C. No. 4 "H" from "L".
   e. Separate the external variable resistor.

2. Adjustment of the VR01

   a. Make preliminary adjustment of the VR01 not to make I.C. No. 4 "L" from "H" when the sensor is made close from open.
   b. Adjust the VR01 until I.C. No. 4 becomes "L" from "H" when the sensor is made open from close. At this time read out output of the sensor and adjust the VR01 to make the output -0.6V right at the moment when I.C. No. 4 has become "L" from "H".

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Remarks ..... Stock No.: Important parts in stock
Part No. : Not in stock

Symbol No.	Stock No.	Parts No.	Description
1	BK0022	BK0022	AC Cord (SK, EK)
	BK0023	BK0023	AC Cord (SG)
2	BK0063	BK0063	Arm Cable
3	WJ1093	WJ1093	Knob (Speed, Auto/Manual)
4	WD1130	WD1130	Escutcheon
5	WJQ0005	1139012007	Speed Adjust Knob
6	WZQ0014	3139086002	Weight Ass'y
7	WDQ0006	3139078104	Arm Base ESC
8	WZ1181	WZ1181	Tone Arm Ass'y(PD288),WZ1192(PD289)
9	WZQ0015	WZQ0504	IFC Ass'y
10	WZQ0016	3139077008	Arm Rest Clip
12	-	3139089009	Arm Pipe
13	WZQ1191	3139079103	Head Shell
14	WZQ0203	1469030207	Dust Cover Ass'y
15	WZ1146	WZ1146	Rubber Sheet
16	UZ1248	UZ1248	Turn Table E
17	WBQ0002	1009008400	Cabinet (SK, UZ)
		1009008303	Cabinet (EK)
18	WBQ0104	1059002304	Bottom Cover
19	-	4756006008	3N
20	-	SM-2078H-1	Washer
21	-	4710308014	3 x 14 pcs.
22	-	WA-01074	Washer
23	WZ1153	WZ1153	Cabinet Insulator
24	UZ1277	UZ1277	9730 Hinge 30096
25	UZ1278	UZ1278	9730 Hinge Plate K1850
26	UZ1285	UZ1285	9720 Full Auto Mecha. Ass'y
27	UOQ0005	4209015009	Restor Lever Ass'y
28	PCQ0001	2229020102	Circuit Board Joint
29	-	4129026000	Circuit Bracket
30	-	4459003007	Cord Holder
31	-	4756010007	5 N
32	AM1009	2179017003	DC Servo Motor DC18V
33	-	4309010108	Motor Plate Ass'y
34	-	4458001000	Cord Clamp
35	-	2059006105	Wiring Terminal (SK, UZ)
	-	2050068003	Wiring Terminal (EK)
36	-	4439008019	Distant Collar
37	-	SC-10822	3 NW
38	-	4439023036	Distant Collar
39	-	SC-10822	3 NW
40	PTQ0004	2339503506	Power Trans (SK)
	PTQ0005	2339506008	Power Trans (EK)
	PTQ0006	2339505300	Power Trans (UZ)
41	APQ0007	2229020102	Circuit Board Power Supply
42	SPQ0003	2124016004	Micro Switch
43	-	4339013104	Switch Lever
44	-	4129025205	Switch Plate
45	SR0158	SR0158	Rotary SRN-1043S 9730
46	APQ0008	2229020102	Circuit Board Push SW
47	WD1131	WD1131	Escutcheon (Auto Start/Cut)
48	WJ1155	WJ1155	Knob (Auto Start/Cut)
49	-	4439008019	Distant Collar
50	-	4629019009	Cushion Rubber
51	RV0280	2119008001	Min Volume
52	-	4129024002	Volume Bracket
53	WDQ0007	1469027209	Strobo House
54	UMQ0002	1469030209	Mirror
55	TDQ0002	3939041001	L.E.D. LN81RCPHL
56	APQ0009	2229020102	Circuit Board L.E.D.
57	-	4639020208	Spring
58	-	4319019102	Lift Shaft
59	-	4744100000	2.6 x 2 SS
60	WZQ0105	WZQ0105	Lifter Ass'y
61	-	4756010007	12 TW-B
62	-	4756102009	12 Nut
63	-	4761002002	2.5 E ring
65	WAQ0005	1459001109	Decoration Plate
66	-	4309009203	Lift Bearing Ass'y
67	-	SM-2078H-1	Washer
68	-	4439023023	Distant Collar
69	-	4620016108	Rubber Bush
70	-	4129028008	Trans Fix Plate
71	-	4129028008	Hinge Plate
72	-	SM-2078H-1	Washer
73	-	47S1003006	3 W
74	-	SC-10822	3 WN
78	-	41139	Rubber Sheet
79	UZQ0003	UZQ0003	Belt
80	-	30058-01	Base Plate Ass'y
81	AYQ0003	35010	Size Selector
82	UOQ0006	45051	Gear
83	UOQ0007	30072-03	Cam Ass'y
84	UOQ0008	40066	Manual Selector Ass'y
85	UOQ0009	40067	Brake Lever Ass'y
86	BXQ0001	45054	Pulley
87	AMQ0102	40100-01	Motor Ass'y
88	-	41132	Motor Bracket
89	SPQ0008	49012	Micro Switch
90	SPQ0005	49014	Micro Switch
91	SPQ0010	40102	Sensor Ass'y
92	SPQ0004	40069	Switch Ass'y
93	-	41133	Switch Bracket
94	UUQ0001	46021	Tension Spring
95	UUQ0002	46024	Tension Spring
96	-	46023	Torsion Spring
97	-	46022	Compression Spring
98	-	47101	Spacer
99	-	30093	P.C.B. Ass'y

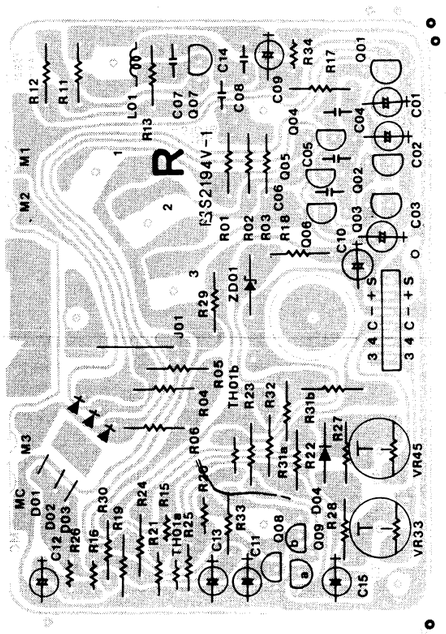
NOTES: UZ: 120V for U.S.A., South Asia, East Asia
SK: 220V for Europe, South-East Asia
SG: 240V for England, Australia
EK: 220V (With Line Voltage Selector) for Europe, South Asia, East Asia

Symbol No.	Stock No.	Part No.	Description
	XAQ0001	5019011001	Carton
	XBQ0001	5029010005	Pad
	ME0206	ME0206	Owner's Manual

MOTOR P.C.B. PARTS LIST

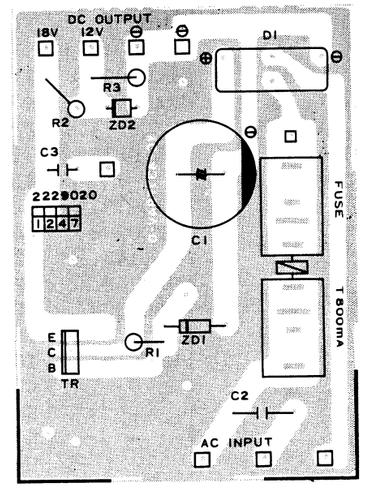
Symbol No.	Stock No.	Description
Transistor		
Q01	TRQ2005	2SA952 or 25A950
Q02	TRQ2005	2SA952 or 25A950
Q03	TRQ2005	2SA952 or 25A950
Q04	TR0029	2SC945 or 2SC2320
Q05	TR0029	2SC945 or 2SC2320
Q06	TR0029	2SC945 or 2SC2320
Q07	TR0029	2SC945 or 2SC2320
Q08	TR0029	2SC945 or 2SC2320
Q09ab	TRQ2004	2SA793
Diode		
D01	TA5012	1S953
D02	TA5012	1S953
D03	TA5012	1S953
D04	TA5012	1S953
Zener Diode		
ZD01	TAQ0201	RD5.1EB
Semi-Fixed Resistor		
VR33	RT0025	4.7KB
VR45	RT0025	4.7KB
Carbon Resistor 1/4W		
RO1	RD0048	470
RO2	RD0048	470
RO3	RD0048	470
RO4	RD0011	330K
RO5	RD0011	330K
RO6	RD0011	330K
R11	RD0030	10K
R12	RD0030	10K
R13	RD0042	1.2K
R15	RD2645	430K
R16	RD2091	2.4K
R17	RD0043	1K
R18	RD0041	1.5K
R19	RD0036	3.9K
R20	RDQ2001	510
R21	RC0259	2.7K
R22	RDQ2003	9.1K
R23	RD0038	2.7K
R24	RD0032	8.2K
R25	RDQ2002	910
R26	RC0251	1.2K
R27	RDQ2003	9.1K
R28	RDQ2001	510
R29	RD0307	11K
R30	RD0035	4.7K
R31a	RD0192	47K
R31b	RD2113	20K
R32	RD0280	4.7M
R33	RD0033	6.8K
R34	RD0050	330

Symbol No.	Stock No.	Description
Capacitor		
C01	CE0828	10μF 25WV E1
C02	CE0828	10μF 25WV E1
C03	CE0828	10μF 25WV E1
C04	CK0140	0.047μF 50WV Ce
C05	CK0140	0.047μF 50WV Ce
C06	CK0140	0.047μF 50WV Ce
C07	CQ0013	0.022μF 50WV My
C08	CK0140	0.047μF 50WV Ce
C10	CE0855	22μF 50WV E1
C11	CE0827	4.7μF 25WV E1
C12	CE0818	22μF 16WV E1
C13	CE0818	22μF 16WV E1
C14	CK0140	0.047μF 50WV Ce
C15	CE0782	0.1μF 50WV E1
Coil		
L101		
Thermistor		
TH01	TVQ0201	SDT-100



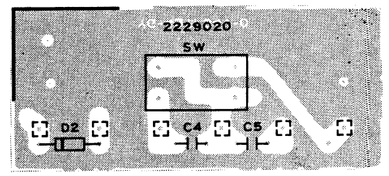
POWER SUPPLY P.C.B. PARTS LIST

Symbol No.	Stock No.	Description
Transistor		
TR	TR0047	2SD235Y
Diode		
D1	TDQ0503	1S2371AF
Zener Diode		
ZD1	TDQ0301	MZ-318B
ZD2	TDQ0302	MZ-412B
Resistor (Metal Oxide)		
R1	RS2720	680 1W
R2	RSQ2002	120 3W
R3	RS2720	680 1W
Capacitor	(El: Electrolytic Capacitor, Ce: Ceramic Capacitor)	
C1	CE0836	1000μF 25WV E1
C2	CK0195	0.01μF 500WV Ce
C3	CK0125	0.01μF 50WV Ce
Fuse		
	BF0237	T800mA



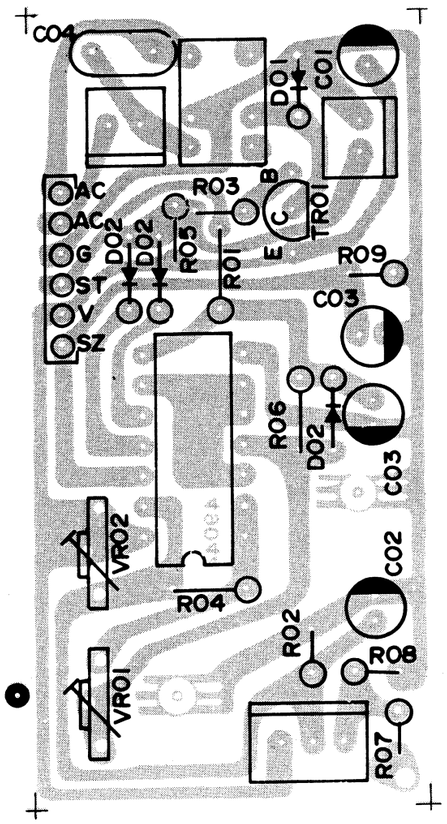
START/CUT P.C.B. PARTS LIST

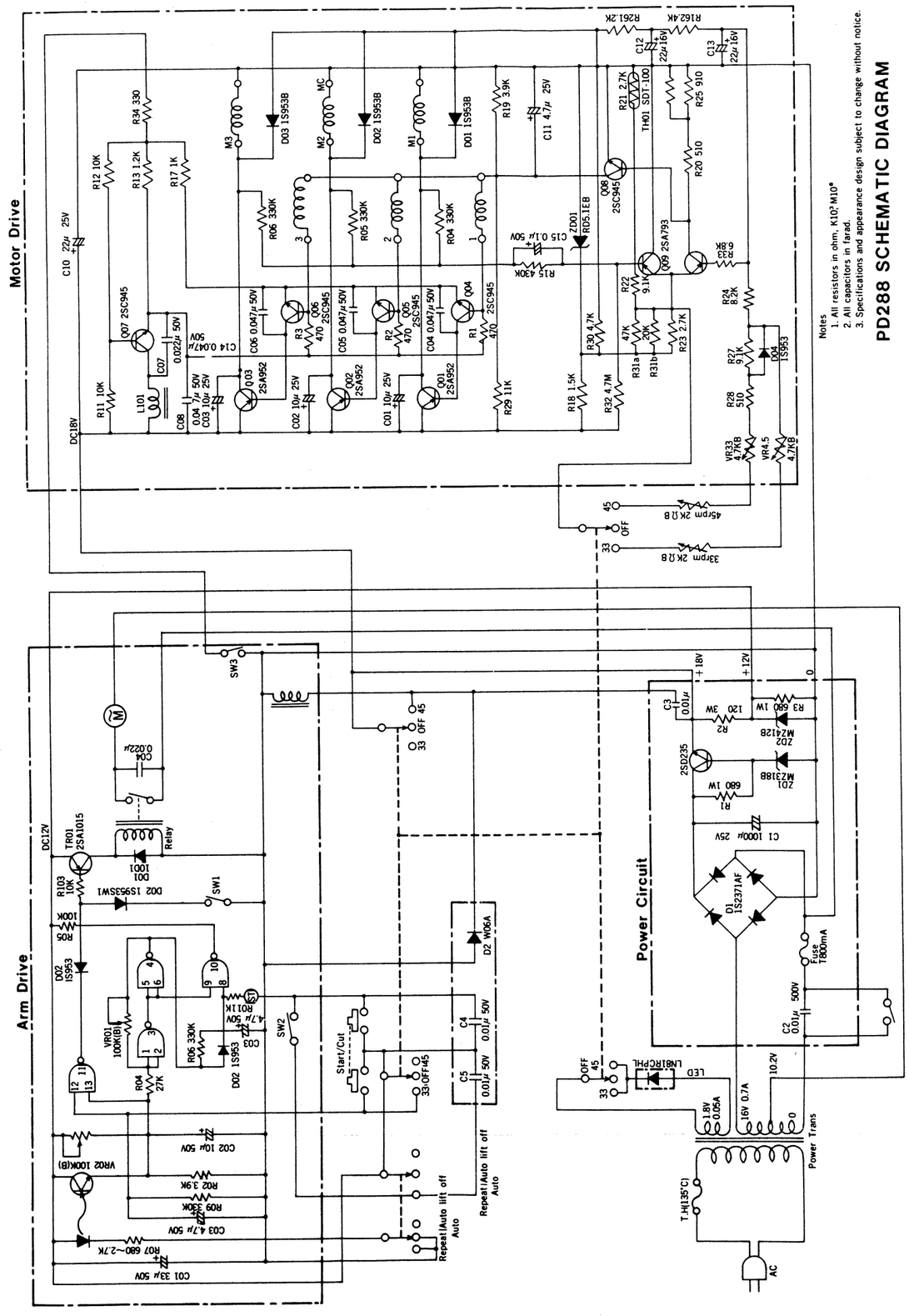
Symbol No.	Stock No.	Description
Diode		
D2	TD0020	W06A
Ceramic Capacitor		
C4	CK0125	0.01μF 50WV
C5	CK0125	0.01μF 50WV
Push Switch (START/CUT)		
	SPQ0004	2123607003



FULL-AUTO MC MECHA P.C.B. PARTS LIST

Symbol No.	Stock No.	Description
Transistor		
TR01	TR0087	2SA1015
Diode		
D01 D02	TDQ0504 TD5012	10D-1 1S953
Semi-Fixed Resistor		
VR01 VR02	RTQ0004 RTQ0004	100K B 100K B
Carbon Resistor		
R01 R02 R03 R04 R05 R06 R07 R08 R09	RD0043 RD0023 RD0030 RD0025 RD0017 RD0011 RD0043 - RD0011	1KΩ 39KΩ 10KΩ 27KΩ 100KΩ 330KΩ 1KΩ Non Use 330KΩ
Electrolytic Capacitor		
C01 C02 C03	CE0819 CE0854 CE0853	33μF 16WV 10μF 50WV 4.7μF 50WV
Mylar Capacitor		
C04	CQ0013	0.022μF 50WV
IC		
	TC0140	TC4011BP





SPECIFICATIONS

[Phono Motor Section]

° Driving System:	Direct-Drive System
° Motor:	DC-servo brushless motor
° Turntable Platter:	30cm aluminum die-cast (weight 1.6kgs including platter-mat)
° Rotation:	33-1/3 rpm, 45 rpm (2-speed)
° Adjustable Range of Rotation:	±3%
° S/N Ratio:	Better than 60dB (IEC-B)
° Wow & Flutter:	No more than 0.035% W.R.M.S.

[Tonearm Section]

° Tonearm:	Straight Arm of static balance type
° Effective Length:	230mm
° Tracking Error:	+2°12', -1°30'
° Overhang:	16mm
° Cartridge Weight:	4g - 13g
° Cartridge Height:	16mm - 19mm (by use of spacers)
° Stylus Pressure:	0 - 3g (direct reading)
° Accessories:	Anti-skate adjustment

[Additional Features]

° Dust Cover	Detachable with semi-freestop hinge
° Stroboscope:	Mirror-reflex type
° Automatic Function:	Auto-Lead-In (Auto Start), Auto-Repeat, Operation Mode Selector (repeat, auto, auto-lift-off), Start/Cut Button

[General]

° Power Consumption:	10W (CSA rated)
° Dimensions:	438 (W) x 160 (H) x 365 (D)mm (13.9" x 6.4" x 14.6")
° Weight:	Net 7.5kgs (16.5 lbs.) Gross 9.5kgs (20.9 lbs.)

Specifications and appearance design subject to change without notice.

LUX CORPORATION, JAPAN
1-1, 1-CHOME, SHINSENRI-NISHIMACHI, TOYONAKA-SHI, OSAKA
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